

REMARKS/ARGUMENT

Claims 1, 2 and 5-18, 20, 21 and 23-28 are currently pending.

The Office Action rejected (1) claims 1, 2, 15, 23, 24, 27 and 28 under 35 U.S.C. § 103 as obvious over U.S. patent 4,107,019 (“Takao”) in view of U.S. patent 6,521,098 (“Lin”) and U.S. patent 6,193,856 (“Kida”); (2) claims 1, 2, 15, 23 and 24 under 35 U.S.C. § 103 as obvious over U.S. patent 4,107,019 (“Takao”) in view of U.S. patent 6,521,098 (“Lin”); (3) claims 5, 6, 25 and 26 under 35 U.S.C. § 103 as obvious over Takao, Lin, and U.S. patent 5,981,092 (“Arai”); (4) claims 7-14 under 35 U.S.C. § 103 as obvious over Takao, Lin, Arai, and U.S. patent 5,522,976 (“Campet”); (5) claims 16-18 under 35 U.S.C. § 103 as obvious over Takao, Lin, and U.S. patent 5,831,760 (“Hashimoto”); (6) claim 20 under 35 U.S.C. § 103 as obvious over Takao, Lin, and IBM technical disclosure; and (7) claim 21 under 35 U.S.C. § 103 as obvious over Takao, Lin, and U.S. patent 5,905,590 (“Van Der Sluis”). In view of the following comments, Applicants respectfully request reconsideration and withdrawal of these rejections.

Takao does not teach or suggest a target that is spray-coated. The Office Action agreed. Further, the Office Action did not assert that Lin teaches spray-coating. In fact, Lin does not disclose spray-coating. Thus, the primary references in the prior rejections do not teach or suggest each claimed element. Accordingly, Applicants respectfully submit that all pending rejections are improper, and should be reconsidered and withdrawn.

The Office Action has asserted that it has not give the “spray-coating” limitation patentable weight. (Office Action at 18). Applicants respectfully submit that failing to give the “spray-coating” limitation weight and full consideration is error -- spray coating results in a different product having improved properties, so the “spray-coating” limitation should be given full weight and consideration.

Submitted concurrently herewith is a Rule 132 declaration explaining how spray coating an essentially ceramic target for a magnetically enhanced sputtering device, where the target contains predominantly nickel oxide NiO_x which is oxygen-deficient with respect to the stoichiometric composition NiO , results in an improved target having improved properties and/or characteristics. In brief, spray coating allows formation of targets having much higher densities (lower porosity) than pressing and sintering, resulting in improved targets. (Rule 132 dec, par. 2).

It has been the Assignee’s experience that pressing and sintering a target contains predominantly nickel oxide results in a target having a density of 75%-85%. (Rule 132 dec, par. 3). In contrast, it has been Assignee’s experience that spray coated targets containing predominantly nickel oxide generally have much higher density, for example 95%-97% density. (Rule 132 dec, par. 4). A specific is attached to the declaration (at Tab A) which depicts the porosity of a NiO_x topcoat which had been spray coated and which had porosity of 3.8%, corresponding to roughly 96% density. (Rule 132 dec, par. 4).

Thus, spray coated targets have different properties than other targets.

Further, the declaration demonstrates that targets having higher density have improved properties as compared to targets having lower density, including but not limited to improved stability during processing. Before sputtering/during vacuuming, a smaller porosity implies that fewer impurities have been adsorbed from air and, thus, a quicker degassing of the vacuum chamber; and during sputtering, a smaller porosity decreases the apparition of micro arcs at the surface of the target and, thus, there is a higher stability of the process as well as decreased aging of the target. (Rule 132 dec, par. 5).

Thus, spray coated targets have improved properties over other targets.

For at least these reasons, Applicants respectfully submit that the “spray coating” limitation distinguishes the present invention from other targets, including but not limited to distinguishing the claimed targets having improved properties as compared to other targets. Accordingly, Applicants respectfully submit that the pending rejections are improper and that all of the rejections should be reconsidered and withdrawn.

Further, and as previously discussed, several other differences exist. Takao does not teach a target that is comprised predominantly of nickel oxide or a magnetically enhanced sputtering device for sputtering a nickel oxide target.

Moreover, Takao does not teach the required oxygen deficient NiOx of the claimed invention. Takao’s target is a “compacted powder mixture of Ni and NiO.” Such a powder mixture differs from the required oxygen deficient NiOx of the claimed invention, for example, in that in a mixture like Takao’s the two materials are not chemically linked -- they are two separate chemical compounds in a solid state. In stark contrast, oxygen deficient

NiOx is one chemical compound in which atoms are covalently linked. Thus, Takao's powder cannot be an oxygen deficient NiOx as required by the present invention.

Further yet, Takao's mixture would be expected to have different properties such as, for example, different conductivity properties as compared to the NiOx compounds of the present invention given that, in Takao's mixture, NiO would be expected to dump the conductivity given that the NiO is on a microscopic scale. Only an oxygen deficient compound such as those required in the present invention would have the required conductivity.

Finally, no evidence exists to indicate that the nickel oxide in Takao's powder is oxygen-deficient with respect to the stoichiometric composition NiO as required by the claims. The "compacted powder mixture" should not be considered to be an oxygen-deficient nickel oxide. Rather, based on the sparse disclosure in Takao, the target appears to be a simple mixture of two different powders which have not reacted with each other -- one powder is Ni and the other is NiO, a non oxygen-deficient nickel oxide. Takao's nickel oxide is simply "NiO" which is not oxygen-deficient.

Lin cannot compensate for Takao's fatal deficiencies. Lin does not disclose a target which has been spray coated and which has the required oxygen deficient NiOx of the present invention.

The secondary and tertiary applied references do not compensate for Lin's and Takao's fatal deficiencies. Nothing in any of the references would have motivated one of ordinary skill in the art to modify the disclosures in Takao or Lin to spray coat an acceptable

Application No. 10/502,052
Response to Office Action dated February 23, 2011

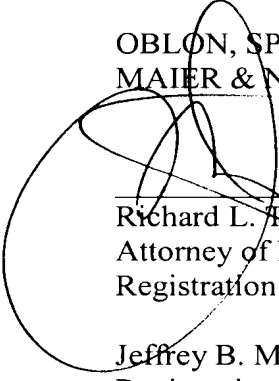
target in a magnetically enhanced sputtering device as required by the pending claims, and/or to modify them in such a way as to spray coat a target having oxygen deficiency and/or the electrical resistivity set forth in the claims. With particular reference to Kida, Kida's col. 3 does not teach or suggest a ceramic layer containing Ni. Further, Kida's col. 5 relates to an underlayer, not Kida's "ceramic layer." Thus, Kida's col. 5 does not disclose a NiO "ceramic layer," let alone the presently claimed ceramic target having the required NiO.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the pending rejections under 35 U.S.C. §103.

Applicants believe that the present application is in condition for allowance. Prompt and favorable consideration is earnestly solicited.

Respectfully submitted,

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